REMARKS

Claims 1-18 are pending in this application. Claims 1-18 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,651,106 to Ashburn (hereinafter "Ashburn"). Claim 1 has been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Claims 5, 11 and 17 have been rejected for having insufficient antecedent basis for certain phrases in the claims. The Examiner has also objected to Figures 1A, 1B, 3B, 4B and 5B as being insufficiently clear.

By the foregoing amendments, Applicants have amended the specification to correct a typographical error, submitted formal drawings and amended the claims to clarify the language used therein and to overcome the Examiner's objections thereto. In regard to the Examiner's rejections of claims 5, 11 and 17, Applicants respectfully submit that there is no antecedent basis problem, as the phrase "a queue" is introduced for the first time in each of those claims. Furthermore, the use of queues in connection with the present invention is discussed in the specification on page 6, lines 1-8 and on page 7, lines 1-6. Because the queues have been discussed in specification and introduced in the claims in question (i.e., claims 5, 11, and 17), there is sufficient antecedent basis for the phrase "a queue."

Ashburn discloses a method and apparatus for generating triangles that can be easily filled by a triangle fill scan converter. The apparatus includes a front end board 10 for receiving graphics primitives to be rendered, with each primitive being specified by coordinate data, color data and texture data. A frame buffer board 14 interpolates the primitive data to generate the image to be displayed on a screen. Both the front end board 10 and the frame buffer board 14 are pipelined to be able to operate on multiple primitives simultaneously (see column 4, lines 36-66). In one embodiment of Ashburn, certain hardware components may be duplicated to increase the bandwidth of the system (see column 7, lines 56-60).

The present invention relates to a method and apparatus for processing video image data, including position data, color data and texture data. Different tasks (e.g., moving or scaling) can be performed on each image data type. Each task consists of a series of arithmetic operations, such as addition or multiplication, that may need to be performed in a particular sequence. To quickly process image data, the present invention provides a common arithmetic unit for each arithmetic operation type. Arithmetic operations of the same type are grouped together, regardless of what task the operation originated from. These operations are then queued for the appropriate common arithmetic unit and performed. Unless a task requires that the operations be performed in a particular order, operations relating

to different tasks can be concurrently performed by different arithmetic units. (See page 6, lines 1-12.)

The present invention differs from Ashburn in that Ashburn does not separate the image data by the arithmetic operation to be performed on the data. In regard to the rejection of claim 1, the portions of Ashburn cited by the Examiner do not disclose the present invention. Figure 12 "shows several examples of triangles having different sort results" (see column 18, lines 16-17). The triangles are sorted according to Y-axis values to assist in processing them (see column 13, lines 5-10 and 16-20). However, the data that defines the triangles is not broken down according to the arithmetic operation to be performed on the data, as is done in the present invention.

In Figure 16, Ashburn discloses a memory map for a register file 180 used to store the data pertaining to each vertex of a triangle; there is no mention of grouping the data other than as a triangle vertex (see Figure 16 and column 19, lines 52-66).

> According to one aspect of the invention, the graphics system divides a quadrilateral into two triangles so that the plane equation generation for the second triangle may be performed more efficiently by using results from the plane equation generation for the first triangle. (Column 9, lines 56-60, emphasis added.)

Based on this statement, the Ashburn apparatus only performs arithmetic operations on data in a particular sequence. If all the equations for the first triangle

have not been completed, it would not be possible to achieve the efficiencies desired by this apparatus. Contrast this with the present invention, in which the arithmetic operations do not always have to be performed in a particular order, and multiple different arithmetic operations relating to the same image data group can be simultaneously performed.

The same remarks as applied to claim 1 are equally applicable to the Examiner's rejections of independent claims 7 and 13. Because the independent claims (i.e., claims 1, 7, and 13) of the present invention are distinguishable over Ashburn, the dependent claims (i.e., claims 2-6, 8-12, and 14-18) should also be distinguishable over Ashburn and no further discussion of the dependent claims is needed.

It is respectfully submitted that the amendments and remarks made herein place pending claims 1-18 in condition for allowance. Accordingly, entry of this amendment as well as reconsideration and allowance of pending claims 1-18 are respectfully requested.

If the Examiner does not believe that the claims are in condition for allowance, the Examiner is respectfully requested to contact the undersigned at 215-568-6400.

Respectfully submitted,

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